

**The five finalist teams are:**

**Team Condor** from Chile - Universidad Técnica Federico Santa María - for their novel alternative design for an aerodynamic speed brake that would recover energy for on-board reuse.

*Team Condor* developed the 'The Energy Recovery Speed Brake', a design solution for the spoilers on an aircraft wing that incorporates a cylindrical set of blades into the design of the aerodynamic speed brake. The rotation of these blades would then be used to generate electrical energy to provide certain auxiliary power functions and facilitate ground operation. The team considered various designs and conducted wind tunnel tests to validate their concept.

**Team Msia on Mars** from Malaysia - Universiti Kuala Lumpur Malaysian Institute of Aviation Technology -  
for their idea to use biodegradable materials from Kapok tree fibres for aircraft thermal and acoustic insulation blankets used for aircraft cabins.

*Team Msia on Mars* proposed that the next generation of aircraft thermal insulation blankets for cabin protection be made from the natural fibres of the Kapok tree. In order to replace the existing glass fibres, their alternative environmentally sustainable approach must achieve relevant thermal and acoustic properties as well as compliance with flammability airworthiness requirements. The team conducted a series of experimental tests including the adoption of a preliminary fire retardant solution to demonstrate the viability of their natural fibre solution.

**Team Wings of Phoenix** from China - Nanjing University of Aeronautics and Astronautics - for their suggestion of a ground-based wind power generation system derived from aircraft wakes.

*Team Wings of Phoenix* suggested a ground-based wind power generation system that exploits the wakes of aircraft generated during takeoff and landing. Their idea involves the placement of a series of leaf-shaped devices along the sides of airport runways that are perturbed by passing aircraft, recovering energy that is otherwise lost. The team considered the electro-mechanical conceptual design of their 'leaves' and the potential to generate electrical power while meeting airport safety regulations.

**Team SSE** from Sweden - Stockholm School of Economics - for their formulation of an ECO points scheme to promote environmentally-friendly flying.

*Team SSE* formulated their ECO points programme to enable passengers to choose the most environmentally-friendly flights. Their concept involves a measure which rewards travellers who choose to fly on an airline with a lower carbon footprint, not only during aircraft operation but also through maintenance and end-of-life disposal. The team also conducted surveys and analysed the programme's business model. They assert that operators will have an added incentive to upgrade their fleets with eco-efficient aircraft.

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**Team O3** from India – Indian Institute of Technology Roorkee - for their proposed approach to prevent aircraft icing by the use of water-repelling polymer coatings.

*Team O3* proposed an approach to the prevention of aircraft icing by the use of water-repelling polymer coatings inspired by the well-known surface characteristics of the lotus leaf. The team considered various formulations for these coatings to better suit the aircraft operating environment and also tested its adhesive strength. This proposed solution could reduce the usage of aircraft de-icing products prior to takeoff. In addition, aircraft weight would be saved as onboard anti-icing equipment would no longer be required.

The Video prize winner is:

**Team Ecolution** from Spain - Universidad Pontificia Comillas, Madrid - for the effective and well-presented visual demonstration of the implementation of low weight natural fibre composites in aircraft cargo containers.

*Team Ecolution* proposed the implementation of an environmentally sustainable natural fibre reinforced plastic jute composite to replace aluminium in the manufacturing of aircraft cargo containers. The team validated their alternative low weight design by simulation and conducted a detailed life cycle analysis to estimate carbon emission benefits from the resulting fuel reduction.